the accompanying examples of these topics are uneven in quality and often incomplete. For example, the discussion of natural selection found on page 26 fails to make any mention of the important contributions population genetics has made in helping us to define and understand this most important biological phenomenon. Also at times the author assumes of the beginning biology student a greater biological background than is reasonable to expect and as a result the significance of many conclusions that are drawn are cryptic to the student. In general, I feel that the bock, because of its brevity, falls short of its expectations.—Dennis R. Parnell, California State College, Hayward.

Vascular Plants of the Pacific Northwest. By C. Leo Hitchcock, Arthur Cronquist, Marion Ownbey, and J. W. Thompson. Part 1, 914 pp., illustrated. University of Washington Press. 1969. $25.00.

Publication of this part of *Vascular Plants of the Pacific Northwest* marks completion of this outstanding contribution to floristic knowledge of North America. Fourteen years have been required for the conclusion of the serial publication of this flora, which was initiated in 1955. This span of time is remarkably short when one considers its coverage and the fact that many less ambitious works have seriously faltered or expired before consummation. This most recent part—actually Part 1 of the series—includes vascular cryptogams, gymnosperms, and monocotyledons. In addition, it contains an index of the plant families, genera, and common names covered by parts 1–5 and the species covered in Part 1. Also included are an un-illustrated glossary and an unexpected and somewhat immured vegetative key to aquatic vascular plants (mostly at the family level) which precedes the treatment of the monocots. There is a modest "Additions and Corrections" section which lists recent records for the area (some of which are accompanied by illustrations), nomenclatural changes, alterations of ranges, or other comments relvant to portions already published. This section of the work is particularly interesting for its documentation of weedy species that have been recorded recently in the Pacific Northwest. The bulk of Part 1 is occupied by treatments of the Cyperaceae and Gramineae, two families which have made my own taxonomic existence more complex than I would like. However, the fine illustrations that accompany the descriptions of each species in both families have convinced me that genera and species do exist in both of them and, furthermore, that it is probably possible for an informed amateur to determine the Northwestern members of these specialized and enigmatic families with relative ease. The vegetative key to the grasses (and to aquatic plants) will be of particular value to biologists concerned with range and wildlife management.

Anyone traveling in Britain or Europe will probably see far more Pacific Northwestern native plants in cultivation there than he will see grown in their natural range. One feature of this flora which perhaps I have underemphasized in my reviews of the earlier numbers of this series is the very valuable commentary on the horticultural merits and demerits of the indigens of the region. These advisory comments have been provided largely by C. L. Hitchcock, whose extensive experience with the cultivation of northwestern natives is well known to horticulturalists in the Seattle area. Gardeners are counseled of the virtues of potential cultigens such as *Scoliopus, Camassia,* and *Allium* spp.; warned against failure with some of the attractive but difficult species of *Erythronium, Fritillaria,* and *Calochortus;* cautioned against the aggressiveness of *Maianthemum dilatatum;* and admonished in strong terms against picking *Trillium* or depleting the rapidly diminishing populations of *Calypso* and *Cypripedium*.

Experts in the families covered by Part 1 doubtless would find some cause for criticism of "their" genera or families (e.g., why *Libocedrus* and not *Calocedrus*?), but I encountered little with which I had serious disagreement. Although this part

is the most expensive of the series, the cost per page is considerably less than that of its predecessors! Having been weaned botanically in the Pacific Northwest and in the institution which might be considered the home of this project I cannot claim to be objective in my assessment of this flora. The superb standards of conception and execution which have characterized this project since its inception have persisted until its completion. The authors deserve our congratulations and warm praise for providing such a durable and scholarly treatment of the vascular plants of the Pacific Northwest.—Robert Ornduff, University of California, Berkeley.

Supplement to A California Flora. By Philip A. Munz. iv + 224 pp. University of California Press, Berkeley and Los Angeles. 1968. $7.00.

The appearance of a 224-page supplement to a flora of California is an event of interest to all botanists interested in the plants of North America. The size of the supplement attests to the amount of work that has been done on the plants of the state in the decade since the publication of the original work. On the other hand, this very size likewise makes the use of the supplement inconvenient. One wishes that a new edition of the Flora could have been prepared instead, but since that was apparently not possible, the supplement is a welcome substitute.

Most of the material in the supplement has to do with changes proposed in revisions and other monographic works that have appeared since 1959. Unfortunately, as in the original Flora, bibliographical citations are abbreviated to the point where they are of limited value. Thus the name of a worker may refer to a publication, a personal communication, or even a specimen, and the status of the date which sometimes follows the name is of comparably uncertain origin. There is no printed bibliography, and the reader will often not be able to distinguish the possibilities given above. On the other hand, the addition of a bibliography would have made the Supplement even longer, and, for those with a thorough working knowledge of the California flora, the brief references given here will be of some use in indicating the sources of the statements given.

In addition, range extensions, new chromosome numbers, and other new information is given for hundreds of species. The format is convenient and the information presented is easily integrated with that in the flora, and the supplement itself is nearly free of typographical errors. There is a useful index, and the sturdy, attractive volume is well printed and bound.

In connection with the supplement, it is of interest to draw attention to two articles that provided statistical analyses of the material in the original book: Smith, Gladys L. and Anita M. Noldeke, "A statistical report on A California Flora," Leafl. West. Bot. 9: 117–123. 1960., and Noldeke, Anita M. and J. T. Howell, "Endemism and A California Flora," Leafl. West. Bot. 9: 124–127. 1960. These papers reveal that 162 families, 1075 genera, 5675 species, 1586 additional subspecies and varieties, and 443 taxa of indefinite status were reported in the Flora, with the largest families being Compositae (822 species), Gramineae (449 species), and Leguminosae (372 species), and the largest genera being *Carex* (144 species), *Astragalus* (93 species), *Phacelia* (87 species), *Lupinus* (82 species), and *Eriogonum* and *Mimulus* (77 species each).

Nearly 30 per cent of the native species were endemic to California, as compared with about 40 per cent reported by W. L. Jepson in his (1925) *Manual of the Flowering Plants of California.* The reduction appears to be due largely to the successful abandonment of Jepson's highly provincial view of the plants of California, as well as to extensive and intensive exploration just beyond the borders of the State, especially in Baja California and Oregon. Nevertheless, California still has an extraordinarily high proportion of endemics for a continental area, and were the proportion of endemism computed for the entire "California floristic province," which excludes the desert areas of California but includes portions of the three neighboring states, the proportion would be much higher.